

A Tool for Evaluating Performance of Water Management Strategies Under Multiple Future Scenarios

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Public Comments

No public comments were received for this proposal.

Technical Synthesis Panel Review

Proposal Title

#0082: A Tool for Evaluating Performance of Water Management Strategies Under Multiple Future Scenarios

Final Panel Rating
inadequate

Technical Synthesis Panel (Primary) Review

TSP Primary Reviewer's Evaluation Summary And Rating:

This proposal intends to develop a monthly time-step model (scenario tool) that would allow for the inclusion of data, information, and scientific understanding of a wide array of factors that are likely to have impacts on water resource planning and management into the future. The proposal states that the "The project will develop an exploratory tool, with both regional and statewide application, that will allow program managers for the California Water Plan and California Bay-Delta Authority to experiment with different assumptions that drive future water supply, water use and land use". However, the "analytical scenario tool" is never described. What are the assumptions, governing relations and constraints? What is the model output? How will the model be validated? The proposal is really a contract for unnamed consultants to do tasks central to DWR's mission. It is not a scientific study.

Additional Comments:

The proposal would be strengthened by more detail and attention to the specific types of variables, concepts, and collection tools that will be utilized. Similarly, while much attention is given to the inclusion of sociodemographic data, it remains uncertain as to what and how this will be done. A

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Technical Synthesis Panel Review

clearer presentation of the sources and formats of all data types is needed. Finally, more specifics about the development of modeling/scenario software would be useful. More information on specific methodological details is needed. The output from the scenario tool is clearly very sensitive to the methods used to construct climate and population scenarios. These methods are not explained. As the proposal does not give an explicit example of the pilot scenario tool that this proposal will build upon, it is difficult to fully grasp the true scale of the proposed model. For example, the model as described would capture data from DWR's 56 planning areas and linkages would be derived to allow for multiple simulations that will provide information about a wide array of topics. This would seem feasible only if DWR engages a wide array of technical experts to capture the best in scientific understanding about all of the issues in the mix. The authors have a sufficient background, experience, and professional success to design and implement this project. Additional partnerships with academic and research personnel would strengthen the proposal and enhance the capabilities of the research team. Aside from the authors, a concern is raised over the extensive use of undetermined consultants to accomplish most of the project. Without an understanding of these consultants, their capabilities, and experience, the capacity to carry out the program is uncertain.

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Technical Synthesis Panel (Discussion) Review

TSP Observations, Findings And Recommendations:

The panel acknowledged relatively positive comments from external reviewers and agreed that "California must plan for its future hydrologic situation". However, the panel felt that those reviews were less than thorough and critical. The panel was very concerned about the lack of detail regarding the development of the model and management scenarios. Few details were provided on the validation of the model. Also, there is no basis upon which to judge the "likely" outcome of this exercise, its output or application because the model will be developed by an unidentified consultant; therefore, there is no way of evaluating the technical capacity or track record of those responsible for creating this tool.

Technical Review #1

proposal title: A Tool for Evaluating Performance of Water Management Strategies Under Multiple Future Scenarios

Review Form

Goals

Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the idea timely and important?

Comments	The goals and objectives are clearly presented. A strong connection is provided that links the goals, objectives, research methods, and data uses throughout the proposal. The proposed project is timely and meets an established need.
Rating	excellent

Justification

Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

Comments	The need for scenario planning tools including a diverse spectrum of ecological and social data in the state of California is justified. A clear statement of need, relevance, and the importance for such information is provided. The proposed methods and data types are particularly relevant and would add to our ability to manage water resources in the face of growth pressures. The existence of previous research and an ongoing pilot test would further justify the utility of this proposed project.
Rating	excellent

Technical Review #1

Approach

Is the approach well designed and appropriate for meeting the objectives of the project? Is the approach feasible? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology, or approaches? Will the information ultimately be useful to decision makers?

Comments	A framework is presented that clearly explains how the project would be developed and implemented. This approach is innovative and provides a strong overview of diverse data that can be used to measure and respond to growth pressure and natural resource needs. The proposal would be strengthened by more detail and attention to the specific types of data variables, concepts, and collection tools that will be utilized. Similarly, while much attention is given to the inclusion of sociodemographic data, it remains uncertain as to what and how this will be done. A clearer presentation of the sources and formats of all data types is needed. Finally, more specifics about the development of modeling/scenario software would be useful. While the approach appears feasible, without such information, it is difficult to thoroughly assess the reliability and validity of the data/methods and how it might benefit decision makers.
Rating	very good

Feasibility

Is the approach fully documented and technically feasible? What is the likelihood of success?
Is the scale of the project consistent with the objectives and within the grasp of authors?

Comments	The project, compilation of data, and development of management software appears feasible. Additional information and detail on specific data and methods for obtaining them would be useful in better determining the likelihood of success/feasibility. The scale of the project is consistent with the goals and objectives. It would appear to be within the grasp of
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Technical Review #1

	the authors.
Rating	very good

Monitoring

If applicable, is monitoring appropriately designed (pre–post comparisons; treatment–control comparisons)? Are there plans to interpret monitoring data or otherwise develop information?

Comments	The combination of an ongoing pilot test and the validation of the scenario tool throughout the project are appropriate. More detail as to the specific steps that will be taken in the validation process would aid in further assessing the utility of these monitoring measures. The use of workshops, expert panels, and other reviews should also add to construct/content validity.
Rating	good

Products

Are products of value likely from the project? Are contributions to larger data management systems relevant and considered? Are interpretive (or interpretable) outcomes likely from the project?

Comments	The main product would be a significant scenario planning tool usable by a variety of interests. Interpretive/interpretable outcomes are likely to result from this project. These would likely be of use to researchers, planners, and practitioners at all levels.
Rating	excellent

Additional Comments

Comments

Technical Review #1

Capabilities

What is the track record of authors in terms of past performance? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

Comments	The authors have a sufficient background, experience, and professional success to design and implement this project. Additional partnerships with academic and research personnel would strengthen the proposal and enhance the capabilities of the research team. Aside from the authors, a concern is raised over the extensive use of undetermined consultants to accomplish most of the project. Without an understanding of these consultants, their capabilities, and experience, the capacity to carry out the program is uncertain.
Rating	fair

Budget

Is the budget reasonable and adequate for the work proposed?

Comments	The budget appears adequate considering the staff needs and time period of the project. The concern over the extensive use of outside consultants does raise some concerns. Additionally, the inclusion of ten thousand dollars for technical report generation seems out of place. A narrative describing and justifying the expenses paid to consultants and the direct costs associated with data collection, management, and activities would greatly help determine the adequacy of the budget.
Rating	good

Technical Review #1

Overall

Provide a brief explanation of your summary rating.

Comments	This project represents an important effort that will significantly contribute to local/state planning and development efforts. An innovative strategy is provided which will incorporate ecological, economic, and demographic data. The combination of these should prove useful for professional seeking viable data for planning. Concerns are raised over the extensive use of consultants on the project and to a lack of clarity regarding the data collected and the methods for validating the scenario tool. Overall the proposal appears to provide a useful contribution to natural resource management.
Rating	very good

Technical Review #2

proposal title: A Tool for Evaluating Performance of Water Management Strategies Under Multiple Future Scenarios

Review Form

Goals

Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the idea timely and important?

Comments	<p>The goals and objectives of this proposal are clearly stated: the investigators propose to develop an integrated scenario tool, that can evaluate the effectiveness of different management strategies under conditions of climate change, poputation growth, and other regional stressors.</p> <p>The idea is timely as California must develop water management policies that are resilient to future regional changes. This task is becoming increasingly difficult as water resources are already stressed (i.e., note the current levels of Lake Powell!).</p>
Rating	excellent

Justification

Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

Comments	<p>The study is certainly justified. I like the approach both because of its integrated nature and because of its recognition of uncertainty. Instead of examining one regional stress ad nauseum (e.g., climate change),</p>
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Technical Review #2

	the investigators are assessing the integrated effects of multiple stressors. This is a necessary element. Also, the approach does not rely on predictions (either of climate change or population growth), and can readily account for uncertainties in California's future.
Rating	excellent

Approach

Is the approach well designed and appropriate for meeting the objectives of the project? Is the approach feasible? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology, or approaches? Will the information ultimately be useful to decision makers?

Comments	<p>As noted above, I think the overall approach is well designed.</p> <p>I would like to have more information on specific methodological details. The output from the scenario tool is clearly very sensitive to the methods used to construct climate and population scenarios. These methods are not explained.</p> <p>The scenario tool is likely to be of great interest to decision-makers. Note that the applicants (DWR) are actually decision-makers themselves, and can certainly benefit from this project.</p>
Rating	very good

Feasibility

Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives and within the grasp of authors?

Comments	The approach is technically feasible. I have worked extensively on a similar model in another state, and know first-hand that the objectives can be
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Technical Review #2

	accomplished with the resources allocated. A project of this nature requires careful management and oversight. The applicants have clearly thought carefully about the engineering and project management aspects of this work, and its ultimate success appears gauranteed.
Rating	excellent

Monitoring

If applicable, is monitoring appropriately designed (pre–post comparisons; treatment–control comparisons)? Are there plans to interpret monitoring data or otherwise develop information?

Comments	
Rating	not applicable

Products

Are products of value likely from the project? Are contributions to larger data management systems relevant and considered? Are interpretive (or interpretable) outcomes likely from the project?

Comments	The scenario tool itself will be a valuable product.
Rating	excellent

Additional Comments

Comments	
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Capabilities

What is the track record of authors in terms of past performance? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

Comments	Although I have not previously seen any work products
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Technical Review #2

	from the applicants, the project team appears well qualified to implement this project.
Rating	excellent

Budget

Is the budget reasonable and adequate for the work proposed?

Comments	The budget seems a bit on the low side, but the proposal objectives can probably be accomplished with careful oversight.
Rating	excellent

Overall

Provide a brief explanation of your summary rating.

Comments	This is an excellent proposal worthy of funding. Additional information on the methods used to generate future scenarios would increase confidence in the scientific rigor of the proposed work.
Rating	very good

Technical Review #3

proposal title: A Tool for Evaluating Performance of Water Management Strategies Under Multiple Future Scenarios

Review Form

Goals

Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the idea timely and important?

Comments	Yes, the three main goals are clearly articulated. There appears to be a single objective, which is to use the interactive scenario tool developed in this proposal, to inform future water management strategies at the regional and statewide scale. Hypotheses are not explicit. The development of a model that recognizes the wide array of variables and the extreme uncertainty that exists in water resource management is certainly timely and important. The proposal clearly recognizes that past (and current) modeling efforts that inform water management decisions are unable to address critical unknowns associated with potential future conditions (i.e., population growth trends, climate change, effects of contaminants, etc.), and so goes on to describe a tool that would capture such uncertainties.
Rating	very good

Justification

Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

Comments	The proposal recognizes that water resource managers and planners are operating in the face of great
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Technical Review #3

	uncertainty, and that continuing in this regard could hamstring managers' ability to adjust to an array of potential future conditions. The study appears highly relevant and justified. As proposed the scenario tool would be designed to use existing data, analytical tools, and the conceptual framework that was developed for the California Water Plan Update 2004. The conceptual framework depicted and described in the proposal highlights the "gap" between what is known/available vis a vis existing analytical tools and data, and what is unknown in terms of future conditions. The interactive, dynamic tool would be built to address this gap. The proposal stops short of talking about implementation or that DWR and CBDA would adopt this new tool as a standard for future planning exercises. It can then only be assumed that the proposal for a demonstration project that is based on a pilot initiative that was developed by DWR for the California Water Plan Update 2004.
Rating	excellent

Approach

Is the approach well designed and appropriate for meeting the objectives of the project? Is the approach feasible? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology, or approaches? Will the information ultimately be useful to decision makers?

Comments	This scenario tool, as described, would allow program managers within DWR and CBDA to vary key factors in a given "scenario" (i.e., demographics, economics, env objectives, future land use, social equity, etc.) and assess how different water management strategies might perform under different future conditions. The approach laid out in the proposal is well designed and appropriate to the task. The approach walks through the development of system linkages, where consultants and staff will engage stakeholders and technical experts for guidance, and the development of the functionality of the tool. These steps are both key to
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Technical Review #3

	the success of the tool (and its application in developing water management strategies) - that the linkages be 'transparent' to the broader community, and that the tool be 'dynamic' in nature, allowing for manipulation of factors that drive the water demands in the system. The scenario tool is very likely to generate alternatives to how the water supply and conveyance systems could be managed to achieve multiple objectives in the future, and perhaps as important, will likely draw on the expert knowledge of those outside the traditional circle of experts in model development to build a more multi-faceted tool. The results of this exercise could be highly instructive to managers, policy makers and decision makers now and into the future.
Rating	excellent

Feasibility

Is the approach fully documented and technically feasible? What is the likelihood of success?
Is the scale of the project consistent with the objectives and within the grasp of authors?

Comments	Yes, the approach is fully documented and feasible. However, as the proposal does not give an explicit, detailed example of the pilot scenario tool that this proposal will build upon, and while one can understand that this would be difficult to do in this proposal format, it is also difficult for the reader to fully grasp the true scale of the proposed model. For example, the model as described would capture data from DWR's 56 planning areas and linkages would be derived to allow for multiple simulations that will provide information about a wide array of topics (i.e., wsr, wq, env obj., social equite, gw use, etc.) This seems highly feasible as long as the proposal does engage a wide array of technical experts to capture the best in scientific understanding about all of the issues in the mix.
Rating	excellent

Technical Review #3

Monitoring

If applicable, is monitoring appropriately designed (pre–post comparisons; treatment–control comparisons)? Are there plans to interpret monitoring data or otherwise develop information?

Comments	There is no monitoring program associated with this proposal. However, DWR intends to solicit 'user feedback' (from those who become familiar with and manipulate the scenario tool) to inform adaptive mangement, and to guide future model efforts. The proposal is to include many members of the public in development of hte tool and in assessing value once complete. This will occur largely through scheduled workshops and through collaboration with the California WAter Plan Advisory Committee.
Rating	very good

Products

Are products of value likely from the project? Are contributions to larger data management systems relevant and considered? Are interpretive (or interpretable) outcomes likely from the project?

Comments	Yes. The proposal indicates that the pilot scenario tool was built using software that can be accessible (via the web) to the broader public. The expanded scenario tool will be made available on the CALifornia WAter Plan Update website where users will be able to modify parameters in the tool, without modifying the structure of the tool, to allow the user to devise his own 'scenario' and play with the array of parameters and uncertainties. DWR intends to solicit feedback from users to inform future model efforts. DWR is also proposing to distribute a final report, adn to present at the CALFED Science Conference and the CA Water and Environmental Society of Civil Engineers, as well as publish findings in various professional journals. Ultimatley, the proposal is for a project that will support activities by DWR and CBDA so I assume that
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	data created for this project will be housed in databases available to those agencies.
Rating	excellent

Additional Comments

Comments

Capabilities

What is the track record of authors in terms of past performance? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

Comments	The PI appears extremely well qualified with a long and impressive career at DWR. He is proposing to solicit consultants to expand the pilot version of the scenario tool, and then validate it and document it, create and manage datebases, conduct stakeholder outreach, organize and facilitate workshops, draft reports, and make the information readily available to the public. ONE can only assume that DWR will draw well qualified applicants from its solicitation that will meet project goals, objectives, and timelines.
Rating	not applicable

Budget

Is the budget reasonable and adequate for the work proposed?

Comments	Considering the potential benefits and the breadth of the project (in terms of ability to capture future uncertainties and to produce a suite of strategies and scenarios that can then be used to discuss alternative mangement regimes, conduct outreach and engage stakeholders in planning efforts, in the form of a flexible model) the budge appears reasonable and adequate.
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Technical Review #3

Rating	very good
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Overall

Provide a brief explanation of your summary rating.

Comments	<p>This proposal describes the development of a monthly timestep model (scenario tool) that allows for the inclusion of data, information, and best available scientific understanding of a wide array of factors that are very likely to have direct impact on water resource planning and mangement into the future. If successful, and it appears highly likely, this tool would greatly expand the ability of managers, policy makers and decision makers, to take into account the variables of climate change, pop growth, env restoration, social equity, etc., and develop a suite of mangement options that reflect those uncertainties. This would allow for more sound planning, but will also engage stakeholders and educate them on the complexities associated with planning models which would lead, hopefully, to more constructive dialogue going forward.</p>
Rating	excellent